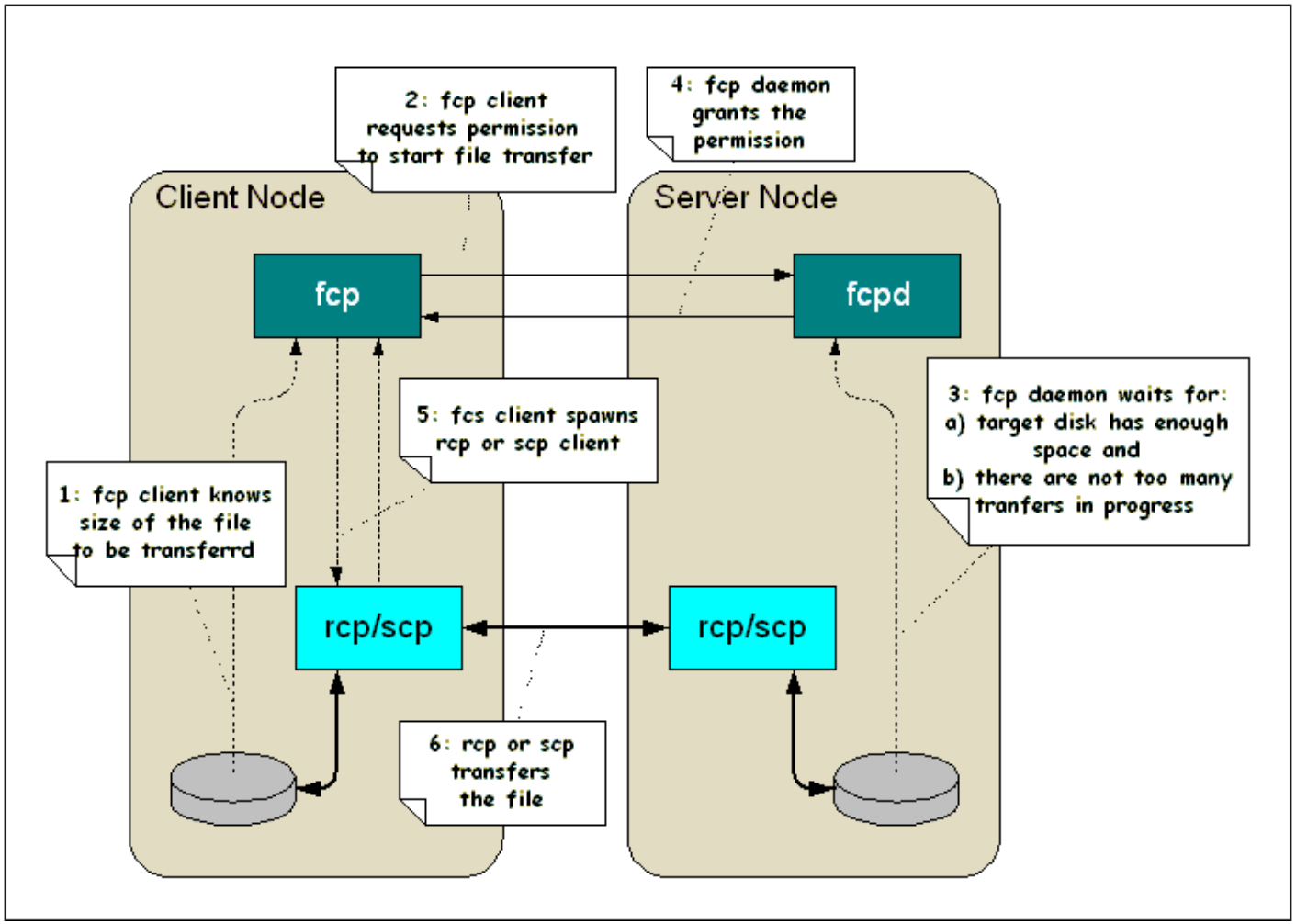
Farm Remote Copy Utility (FCP)

What Is It for ?

- To help batch processes transfer data to and from permanent disk storage (I/O node)
- Potential problems to solve when transferring data between the I/O and a worker node:
  - Limited network bandwidth
  - Limited through-put of the I/O node
  - Limited size of the upload target disk
- What FCP does:
  - Limits number of concurrent data transfers
  - Does not allow to start an upload until there *is* and *will be* enough disk space to finish it

http://www-isd.fnal.gov/fcp/FCPPres.htm

How It Works



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User Interface

- Basic functions:
  - UPS setup:

    ```
    $ setup fcp
    ```

  - Copying a file using rcp:

    ```
    $ fcp /path/data.file server:/path/file
    $ fcp server:/path/file /path/data.file
    ```

  - Specifying rcp options:

    ```
    $ fcp -c rcp -p server:/path/file /path/data.file
    ```

  - Using scp:

    ```
    $ fcp -c scp -c none data.file server:/path/file
    ```

  - Wildcards are not supported (yet):

    ```
    $ fcp /tmp/* server:/tmp        # will not work !
    ```

  - Verbose mode:

    ```
    $ fcp -v ~/.cshrc fnsfo:/tmp/.cshrc
    Request upload...
    Request granted.
    Spawning <rcp  /home/farms/.cshrc fnsfo:/tmp/.cshrc> ...
    Transfer status =  0
    ```

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User Interface

- Get server status

```
$ fcps fnsfo
 RID                  user.pid@host TS Free/Avbl(MB)    Size File
---- ------------------------------ -- ------------ ------ ----------
 600           farms.53429604@fnsfo U*   3287/2981      101 /tmp/file.3
 601           farms.57052704@fnsfo U*   3287/2981      100 /tmp/file.4
 602           farms.55467993@fnsfo U*   3287/2981      105 /tmp/file.5
 603           farms.55397610@fnsfo D*                   99 /tmp/file.1
 604            farms.36191@fnpc230 D                    93 /tmp/file.1
 605            farms.25911@fnpc221 D                    85 /tmp/file.1
```

- Aborting a request
  - If you know the transfer has finished:

    ```
    $ fcp_abort 601
    ```

  - Transfer will be automatically aborted after configurable time-out (say, 30 minutes)

http://www-isd.fnal.gov/fcp/FCPPres.htm

Current Status and Possible Future

- Installed on fnsfo farm, beta-tested and evaluated by E781
- Basis for possible future development
  - *Reservations*: I want to copy 10 files 500 MB in total, reserve 500 MB for me on the target disk
  - *Multi-disk placement*: I have 5 disks, choose whichever is available, put my file there and let me know where it is stored
  - *Improved scheduling*:
    - Currently, simple queue discipline
    - Small transfers deserve higher priority
    - Big transfers should not wait indefinitely
    - Prioritization on per-user, -group, -project basis
  - *Improved reliability*: Do not use rcp/scp, use own transportation means – know exactly when transfer is over
    - Note: security issues will have to be addressed